



## Original Communication

## Fatal suicide cases in Port Said city, Egypt

Seham A. Gad ElHak MD (Faculty of Medicine)<sup>a</sup>, Amr M. El-Ghazali MSc (Master)<sup>b</sup>, Mohamed M. Salama MSc, DTQM (Faculty of Medicine)<sup>a,\*</sup>, Ahmed Y. Aboelyazeed MSc, DTQM (Faculty of Medicine)<sup>c</sup>

<sup>a</sup> Mansoura University, Forensic Medicine and Toxicology Department, Mansoura, Egypt

<sup>b</sup> Port Said Forensic Institute, Port Said, Egypt

<sup>c</sup> Mansoura University, Community Medicine Department, Mansoura, Egypt

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## ABSTRACT

In the present study, a retrospective evaluation of suicide cases in the city of Port Said from 1998 to 2004 is done. The demographic data of the cases were evaluated. There were 80 cases of suicide 54 of them (67.5%) involved males. Age distribution showed a predominance in the age range 20–30 years. Methods of suicide included rodenticides intake in 25% of cases, drowning in 18.75%, burns in 16.25%, firearm injuries in 13.75%, jumping from height in 10%, drug intake in 8.75% and hanging in 7.5%. A medico-legal autopsy had been carried out for all cases. In conclusion, we emphasize the importance of rodenticides control as well as necessity of performing a psychological autopsy.

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## 1. Introduction

Suicide is an important public health problem, ranking among the top ten causes of death for individuals of all ages in most developed countries. Studies of suicide have identified a number of risk factors for suicide completion.<sup>1</sup>

It is believed that the most dramatic increase in suicide mortality increase will be observed in the Third World countries. This is because the socioeconomic and behavioral factors of suicide risk are present in higher degree than developed countries.<sup>2</sup>

Demographic features like age group, sex and method of suicide may exhibit variations between societies and between different regions of the same country, and even in the same region, depending on various variables.<sup>3</sup>

In Egypt, suspicious deaths – either through history or examination – are referred to medical examiner who has the authority to declare the potential of being unnatural death and request full investigations from the related police department, which in turn ask the forensic institute of the city where the death occurred to perform complete autopsy and full toxicology screen in every case and after full investigations have been completed the manner of death is declared – by the D.A. office – according to forensic pathologist and toxicology screen results besides the police investigations.

The forensic institute in Port Said city is one of the institute all over Egypt it is responsible for cases in Suez Canal region including Port Said city, Suez city, Ismailia city and Sinai.

## 2. Material and methods

Criminal investigation reports of suicide cases in Port Said Forensic Medicine Institute, during the period 1998–2004, were investigated retrospectively. Data of reports (**autopsy and full toxicology screen which was done in every case**) were transferred into a basic data sheet and evaluated statistically.

## 3. Results

There were 80 cases of suicide in Port Said city in the period from 1998–2004 (1998: 10 (12.5%), 1999: 12 (15%), 2000: 15 (18.75%), 2001: 13 (16.25%), 2002: 11 (13.75%), 2003: 10 (12.5%) and 2004: 9 (11.25%)). Fifty four of the victims (67.5%) were males and 26 (32.5%) were females.

In Port Said the population is estimated to be 488,527 in 1998 with yearly growth rate of 1.7%.<sup>4</sup> So, the rate of suicide is estimated to be 2.04/100,000 in 1998, 2.41/100,000 in 1999, 2.96/100,000 in 2000, 2.53/100,000 in 2001, 2.10/100,000 in 2002, 1.88/100,000 in 2003 and 1.66/100,000 in 2004.

Table 1 shows the age and sex distribution of the victims. The youngest victim was 18 and the oldest 82 years of age. In addition 45% of the deceased were in the age group of 20–30 years, 20% were in the age group of less than or equal to 20 years, while 5% where older than 50 years.

\* Corresponding author. Tel.: +20 257330899.

E-mail address: [toxicsalama@hotmail.com](mailto:toxicsalama@hotmail.com) (M.M. Salama).

**Table 1**

Age and sex distribution of the victims.

Age groups	Male		Female		Total	
	n	%	n	%	n	%
≤20	7	12.9	8	30.76	16	20
>20–30	30	55.60	7	26.93	36	45
>30–40	7	12.9	8	30.76	15	18.75
>40–50	5	9.30	0	0	4	5
>50–60	3	5.60	1	3.85	5	6.25
>60–70	1	1.85	1	3.85	2	2.5
>70–80	1	1.85	0	0	1	1.25
>80	0	0	1	3.85	1	1.25
Total	54	100	26	100	80	100

 $\chi^2 = 14.39$ ,  $P = 0.044$ .**Table 2**

Methods of suicide regarding sex.

Methods	Male		Female		Total	
	n	%	n	%	n	%
Rodenticides	8	14.8	12	46.15	20	25
Drowning	13	24.07	2	7.69	15	18.75
Burn	7	12.96	6	23.08	13	16.25
Firearm	11	20.37	0	0	11	13.75
Jumping	3	5.55	5	19.24	8	10
Drugs	7	13	0	0	7	8.75
Hanging	5	9.25	1	3.84	6	7.5
Total	54	100	26	100	80	100

 $\chi^2 = 23.15$ ,  $P < 0.001$ .**Table 3**

Suicide cases distributed by seasons of the year.

Season	Male	Female	Total
Winter	10 (18.5%)	9 (34.5%)	19 (23.75%)
Spring	15 (27.8%)	3 (11.5%)	18 (22.5%)
Summer	16 (29.6%)	7 (27%)	23 (28.75%)
Fall	13 (24.1%)	7 (27%)	20 (25%)
Total	54	26	80

 $\chi^2 = 4.07$ ,  $P = 0.2$ .

In males, the highest incidence age group was that of 20–30 (55.55%) however in females both the groups of less than or equal to 20 and more than 30–40 had the highest incidence (30.8%).

Rodenticides ingestion accounted for 25% of all suicide victims, drowning in 18.75%, burns in 16.25%, firearm injuries in 13.75%, jumping from height in 10%, drug intake (**barbiturates and opiates**) in 8.75% and hanging in 7.5%. The distribution of the method with regard to sex is shown in Table 2. In males, the leading cause was drowning (24.07%) while it was rodenticides ingestion in females (46.15%). Although suicide by firearms in males occurred in 20.37% of cases, no firearm suicides were recorded in females. Similarly, suicide by drug ingestion occurred in 13% of male cases with no cases of drug intake in females.

There were no significant difference of suicide numbers regarding the four seasons of the year (Table 3).

#### 4. Discussion

By comparing the suicide rates in Port Said to other studies, e.g. Eskibehir (Turkey) 4.42/100,000 for the year 1999,<sup>5</sup> Canada 13.4/100,000 in the 2001–2002 year,<sup>6</sup> 12.0/100,000 for the period from 1985–1995 in USA<sup>7</sup> and even 23/100,000 for 1992 in Canadian northwest territories.<sup>8</sup>

We can see the lower rates in both Port Said and Eskibehir compared to the Canadian studies, this contradicts the assumption that third world regions suffer higher suicide rate due to their poor socioeconomic levels.

It seems that religious state can affect other risk factors, this was also proposed by Nachman et al. (2002)<sup>9</sup> who concluded the same finding when analyzing suicide in Israel where the Jewish religion prohibit the act of suicide the same as in Islam in Port Said city. Unfortunately no other similar data from other Egyptian institutes have been published to our knowledge for further comparisons.

In the present study various patterns were noticed. The predominance of male suicide victims was observed, this is consistent with many studies carried out in Turkey<sup>5</sup>, Israel<sup>9</sup>, Canada<sup>10</sup>, Hungary<sup>11</sup> and Brazil.<sup>12</sup> An explanation was made by Nachman and colleagues (2002)<sup>9</sup> stating a male serotonin-related syndrome of impulsivity, acting out as a responsible factor. Also in males there is high incidence of other risk factors, e.g. availability of firearms, more financial problems, difficulty in having a good job opportunity and more incidence of drug of abuse.

Suicide by rodenticides ingestion was the most common method in this study. In Lithuania<sup>13</sup> and Turkey<sup>5</sup> suicide by hanging was the most common method, whereas in countries with massive firearm use, suicides by gunshot wounds are more frequent.<sup>14</sup>

In Egypt rodenticides are composed of cholinesterase inhibitors. They are very cheap and easy to obtain (sold in super markets). Another explanation was *suicide gamble* where toxic substance is ingested with the belief that family members will be home before death occurs or physician will save his life.<sup>15</sup>

Usually the victims of rodenticides ingestion develop episodes of vomiting, diarrhea, sweating, fasciculation of muscles with the most prominent pinpoint pupil, these findings can be confirmed (in some hospitals) by low serum cholinesterase level. At autopsy the most common finding is pulmonary oedema with increased secretions in respiratory tracts. Some times gastric contents analysis reveals black granules although this is rare due to extensive vomiting episodes.

Methods of suicide varies according to sex, so, despite that the leading method in this study was by rodenticides, however, drowning was the commonest method in males. This may be due to the fact that rodenticides are always available at home where most women stay (in Port Said), while men spending a lot of time out side have more access to the sea (Port Said lies on the Mediterranean).

It is to be noticed that all firearm and drug ingestion suicide cases were in males which can be attributed to their availability for men and being difficult to obtain for women.

The prevalent age group was the age range 20–30 years consistent with other studies in Israel<sup>9</sup>, Canada<sup>10</sup> and Brazil.<sup>12</sup> This may be attributed to the emotional instability and problems facing youth.

The four seasons did not seem to have influence on suicide cases rate although other reports have shown different findings.<sup>16,17</sup> Absence of this finding in our study may be due to the fact that weather in Egypt is average all round the year with no extremes regarding time compared to these countries, while in an Israeli study by Nachman et al. (2002)<sup>9</sup> a similar finding can be noticed where Israel is a neighboring country with similar climate.

It is to be concluded that despite performing thorough autopsy in all cases, yet psychological evaluation and history taking from the victim family is still deficient which shows the need of psychological autopsy in suicide cases in Egypt. Psychological autopsy may have great value in defining possible risk factors which may be undiscovered in routine autopsy and defining these factors may help preventing possible future cases of suicide.

### Conflict of interest statement

There is no conflict of interest between any of the authors and any one.

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### Ethical approval

None declared.

### References

- Ernst C, Lalovic A, Lesage A, Seguin M, Tousignant M, Turecki G. Suicide and no axis I psychopathology. *BMC Psychiat* 2007;**4**:7–10.
- Diekestra R. *Current approaches: suicide & attempted suicide: risk factors, management & prevention*. Southampton: Duphar Medical Relations; 1991.
- Stojkoski K, Grozeva M. Strategy for forensic analysis of suicide cases in Bulgaria. *Trakia J Sci* 2005;**3**:18–20.
- Badran MF, El-Haggar SM. Optimization of municipal solid waste management in Port Said-Egypt. *Waste Manage* 2001;**26**:534–45.
- Balci YG, Albek E. Suicide in the Province of Eskişehir, Turkey: the approach of forensic medicine. *Turk J Med Sci* 2003;**33**:43–7.
- New Brunswick Department of Health and Community Services. Vital Statistics: Annual Report. Fredericton (NB): New Brunswick Department of Health and Community Services; 1999 ISBN 1-55,396-476-4.
- Ferrada-Noli M. A cross-cultural breakdown of Swedish suicide. *Acta Psychiat Scand* 1997;**96**:108–16.
- Isaacs S, Keogh S, Menard C, Hockin J. Suicide in the northwest territories: a descriptive review. *Chron Dis Can* 2000;**19**.
- Nachman R, Yanai O, Goldin L, Swartz M, Barak Y, Hiss J. Suicide in Israel: 1985–1997. *J Psychiat Neurosci* 2002;**27**:423–8.
- Séguin M, Lesage A, Chawky N, et al. Suicide cases in New Brunswick From April 2002 to May 2003: the importance of better recognizing substance and mood disorder comorbidity. *Can J Psychiat* 2006;**51**:581–6.
- Havasi B, Mágóri K, Tóth A, Kiss L. Fatal suicide cases from 1991 to 2000 in Szeged, Hungary. *FSI* 2005;**147**:S25–8.
- Parente A, Soares R, Araujo A, Cavalcante I, Monteiro C. Characterization of suicide cases in a Brazilian northeastern capital. *Rev Bras Enferm* 2006;**60**:377–81.
- Cepla A. Suicides in Lithuania. In: IAFS congress book, Section 1 – forensic pathology. Proceedings of the 13th IAFS congress, August 22–28, Düsseldorf, Germany; 1993.
- Lester D. Suicide, homicide and the quality of life in various countries. *Acta Psychiat Scand* 1990;**81**:332–4.
- Fombonne E. Suicidal behaviours in vulnerable adolescents. Time trends and their correlates. *Br J Psychiat* 1998;**173**:154–9.
- Mohanty S, Patnaik M. Suicide in India – A four year retrospective study. *J Forensic Legal Medicine* 2007;**14**:185–9.
- Petridou E, Papadopoulos FC, Frangakis CE, Skalkidou A, Trichopoulos D. A role of sunshine in the triggering of suicide. *Epidemiology* 2002;**13**:106–9.